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(54) STEEL FOR NITRIDED SPRING EXCELLENT IN FATIGUE STRENGTH AND NITRIDED SPRING

(57)Abstract:

PURPOSE: To produce a steel for nitrided spring excellent in fatigue strength and the spring by subjecting a low alloy steel material, in which the size of non-metallic inclusions in the cross section in a rolling direction is specified, to nitriding treatment.

CONSTITUTION: A steel material, which has a composition containing, by weight, 0.3-0.7% C, 0.8-4% Si, 0.2-1.5% Mn, 0.4-3% Cr, 0.02-0.7% sol.Al, and <20ppm O and further containing one or more kinds among 0.05-0.5% V, 0.05-0.5% Nb, 0.05-0.5% Mo, and 0.1-3% Ni, is hot-rolled and wiredrawn. The resulting wire is formed into spring state, and, after formed into spring state having a structure where the size of non-metallic inclusions in 3600mm² cross section in a rolling direction is regulated to $\leq 15\mu\text{m}$, the resulting spring is nitrided. By this method, the nitricled spring, in which hardness in the part between the surface and a position at a depth of $\leq 10\mu\text{m}$ from the surface is regulated to ≤ 900 Vickers hardness Hs and also Vickers hardness Hi in the inner part is regulated to 450-570 and which has excellent fatigue strength, can be produced.

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